



California Postsecondary Education Commission

A Contextual Examination of Education and Workforce Development in California

Commission Report 05-13 • December 2005 • www.cpec.ca.gov

Introduction

Postsecondary education in California is almost universally assumed to be critical to a quality workforce and a healthy economy. But behind that general assumption lies a number of complex questions. For

The role and responsibility of postsecondary education in preparing California's workforce demand both a research-based examination and a comprehensive discussion that can bring education and workforce interests together at the state level. This policy brief and others to follow examine where and how the state's postsecondary systems fit into a plethora of programs that educate and train workers. The outcome will be policy recommendations that support postsecondary education in most effectively fulfilling its role in preparing a workforce to meet the challenges of a 21st century economy.

instance, are California colleges and universities informed by, and responsive to, the demands of California's changing economy? Do we need to increase the production of bachelor's degrees to meet the demand for a trained and skilled workforce in a new "global economy"? What is the contribution of higher education to new industries? What is required of education to support a healthy economy with a high quality of life? Trying to answer these and many other questions means sifting through an often-conflicting body of information. Consider a few recent statistics:

- Between 2002 and 2012, the U.S. Bureau of Labor Statistics expects about 56 million jobs to open nationwide. It also expects that 42 million of these jobs—75%—will be filled by workers without a bachelor's degree.
- The Public Policy Institute of California (PPIC) says that by 2020, the share of this state's population with a bachelor's degree will increase from 28% to 33%. But, they say, the job market will demand a higher percentage, with some estimates as high as 39%.
- Employment projections reviewed by the California Postsecondary Education Commission show the occupations with the greatest job growth currently are in retailing or food service—jobs that don't normally require a college education.

Disconnected pieces of information like these demonstrate the difficulty for state policy makers as they try to determine the educational and workforce needs of the next decade and how to address those needs. While there is considerable interest in the topic, there are no clear answers to many questions that underlie the fundamental question: "How does California's postsecondary education system contribute to the needs of the state's economy and its future?"

To examine that fundamental question and its implications, the California Postsecondary Education Commission (CPEC) has launched an extended research study. Postsecondary education is a large enterprise in this state—the public portion alone spends \$12 billion dollars and serves more than 2 million students. Private degree-granting institutions as well as vocational schools serve hundreds of

thousands more. That their students eventually will enter the workforce is a given—but the role that postsecondary institutions play in getting them there is not necessarily well defined.

A fundamental part of the problem is that the nexus—or connection—between postsecondary education and workforce development is not yet being addressed in a comprehensive statewide fashion in California. Postsecondary education is made up of many segments, public and private. Workforce development in California is another multi-faceted set of institutions and agencies. Both sectors have their own sets of goals—often different goals for different segments. There are not necessarily any common goals, nor efforts to ensure the goals of the two sectors are aligned. Each sector has a definite role to play but there is little clarity about how many gaps and how much duplication may exist. Conversations, at least at the state level, tend to take place in individual silos—among educators or among workforce experts. While there seems to be considerable dialogue and collaboration at the local and regional levels, the connections are weak and the communication is fragmented at the state level.

The connection between postsecondary education and California’s workforce and economy is too important not to seek a more comprehensive examination at the state level. Not only do we need to find out what is actually happening, we need to examine the policies that shape that reality and identify policies the state ought to consider that could more effectively connect postsecondary education and workforce development. We are in an era when the rapid changes in the economy make it imperative that the educational systems of our state—both K-12 and postsecondary—are adaptable and effective in the role they play in workforce development. CPEC’s aim is to lead a more comprehensive state-level examination of postsecondary education in that discussion.

Summary of policy briefs. CPEC’s examination of the nexus between postsecondary education and workforce development is being carried out through a series of policy briefs. This first brief is an overview of the history and context of workforce development and education in California. It outlines the current workforce development system in California and explores how K-12 and postsecondary education evolved as California shifted from an agrarian to an industrial economy and then to one that is information-based.

A second brief will focus on the knowledge and skills that will be necessary for success in both higher education and the workforce. That brief will examine the curricula of K-12 education as well as articulation from high school to work or to postsecondary education. A third brief will look at the demands and projections of California’s current and future workforce and will include demographic, economic, industry, and skills trends and projections. A fourth and final brief will analyze data from the previous briefs, draw conclusions, and make recommendations.

Developing the briefs and the role of the advisory committee. Due to the size and complexity of this topic, CPEC will approach this project by first drawing on the talents and expertise of its researchers for a comprehensive investigation of the role of postsecondary education in addressing workforce needs. In order to look more closely at the issue, the Commission has convened a technical advisory committee composed of representatives of K-12 and higher education, business, labor and workforce organizations, and State agencies. The purpose of the committee is two-fold: first, to advise commission staff on the creation and exploration of research questions; and second, to increase and improve dialogue among the different segments and agencies in the state.

Economic context. While this first brief largely addresses the educational context for this study, it is important to briefly review the economic context as well. Over the last century, California's education focus has shifted as its economy has changed. In the late 1800s and early 1900s, California moved from an agrarian to an industrial economy, as did much of the nation. While many sought postsecondary education, it was also true that people without it could make a good living. After World War II and through the latter half of the 20th century, there was a gradual shift to a "new economy" incorporating multiple industries built on new technology. Traditional manufacturing jobs began to disappear and new, "knowledge-based" industries emerged, built around the rise of computers and information technology. Growing industries over the last two decades include telecommunications, motion pictures and multimedia, tourism, space and navigation, professional services, and biotechnology and genetic engineering.

By the turn of the 21st century, the pace of change in the economy picked up. In addition, the economy has expanded globally as American businesses moved abroad to take advantage of low cost labor, and other nations expanded their own capacity in a world market. While America remains the world's foremost economy, a number of nations—most notably China and India—have begun to build their human capital in technology and innovation, and are educating more and more knowledge workers who will be competitive with California and U.S. workers. These changes pose both new threats and new opportunities for the American economy. As the economy has changed, education—particularly postsecondary education—has changed, and has become even more critical to California's competitiveness and future prosperity.

Current components of California's workforce investment system

At the core of a workforce development system are the institutions and programs by which individuals are educated, trained, and retrained for employment and participation in the workforce. Workforce *development* refers to the entirety of these systems, including K-12 and postsecondary education systems, public and private sector training programs, and economic development and employment expansion programs. Also included are the workforce activities of labor and community-based organizations. Workforce *preparation* can be defined as the programs offered both in the public and private sector, specifically for employment and training rather than academics. These programs serve both youth and adults (see Display 1).

The components of the overall workforce development system in California can be viewed as layers, with K-12 education serving as the foundation for both postsecondary education and workforce preparation. K-12 education has the task of providing individuals with the knowledge and skills necessary to be successful in both spheres. Layered on that is public and private postsecondary education on one side, and training programs and labor-based organizations on the other. This second layer has become more complex in recent years as individuals change jobs more often, upgrade skills, and attain higher degrees, increasing the number of input and output points in both education and workforce preparation.

Display I: California's Workforce Investment System

Public and Private Postsecondary Education	Public and Private Sector Employment and Training Programs
<ul style="list-style-type: none"> • Community Colleges • California State University • University of California • Private Colleges and Universities • Specialized Career Training Institutions 	<ul style="list-style-type: none"> • Public Workforce Programs Workforce Investment Act Employment Training Panel • Private Sector Training • Emerging Partnerships Community Colleges Extension Programs
K-12 Education	
<ul style="list-style-type: none"> • Elementary and Secondary Education • Vocational or Career Technical Education • ROCPs, Partnership Academies, Career Academies • Adult Education—Basic, Vocational, Citizenship 	

K-12 and workforce development in California

K-12 education and workforce development have a complex relationship dating back to the early part of the twentieth century. As the economy of California shifted and evolved, so has the role and definition of vocational education—the most visible form of school-based workforce preparation—and its place in the K-12 system.

Vocational and Technical Education. The long public commitment to vocational education in the United States and California began around World War I, when the federal government began support for it with the Smith-Hughes Act of 1917. The Act provided federal monies to states for programs and for teacher salaries, specifically those involved in educating students for industry, agriculture, and home economics. This long-standing program, now known as the Carl Perkins Act, was the underpinning of workforce education in California's K-12 schools.

During the post World War II era, the rationale behind K-12 education began to shift. Due to changing educational needs of the nation, K-12 had to alter its educational focus from post-agrarian to industrial and technical. Until the latter part of the 20th century, there was no need for a large percentage of the population to be prepared for college, but there was a growing need for individuals to be prepared to work in more technical industries. By the late 1970s, largely due to breakthroughs in science and technology, there was a shift in the educational needs of the workforce. Due to that shift to what is now called “the information age,” employees were required to have more knowledge and technology skills in the workplace.

California's response. In 1981, California began an effort to integrate workforce development and academics in K-12 education through the creation of Partnership Academies. The first was established at Peninsula Academy at Sequoia High School in Redwood City and the model soon spread statewide. The curriculum initially stressed computer and electronic training, although Partnership Academies now include training for many other occupations.

The Partnership Academies were reflective of an increasing sense that vocational education had to have more academic rigor, as did public education in general. In 1983, the emphasis on academic rigor and college preparation helped shape California's Hart-Hughes Education Reform Act. That act was also a response to the watershed report, *A Nation at Risk*, which pronounced that the U.S. education system was mediocre at best. The Hart-Hughes Act raised standards for schools, lengthened the school day and year, changed the curriculum, and sought to attract better teachers.

Economic shifts and the impact of the Hart-Hughes Act reduced traditional vocational education in high school. In 1978, Proposition 13 shifted K-12 funding from local property taxes to mostly state general funds, and overall funding suffered. Over the following years, high school vocational education had to compete for resources not only with basic academic programs, but also with 290 Partnership Academies, 72 Regional Occupational Centers and Programs (ROCPs), adult education, and California Community Colleges. Almost two-thirds of the state's K-12 vocational classes were eliminated. California experienced an economic decline in the early 1990s that further strapped funding for vocational education. With limited resources available, and an emphasis on academic reform, California's high schools became ever more focused on preparing students for college, and vocational education suffered.

Transition to Career Technical Education. As a response to the pressure for academic improvement and the reductions in resources, vocational education shifted emphasis in the 1990s. Its name also changed to career technical education (CTE) or "career tech". The California Department of Education defines career technical education as:

A program of study that involves a multi-year sequence of courses that integrates core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers.

This change accompanied the development of new academic standards for students, as well as an assessment of student achievement that held schools accountable for results. Simultaneously, CTE experts started to examine the need for more rigorous standards to meet the increased technical skills needed for most jobs. An example can be found in the advances in auto technology, resulting in the need for auto mechanics to be knowledgeable about computers. In addition to academic standards adopted in the core curricular subjects in the 1990s, California is now putting into place new standards in career technical education to try to bring what was known as vocational education into the 21st century.

Two other developments supported this shift. In 1994, the federal School-to-Work Opportunities Act (School-to-Career in California) provided support for the new approach to career and technical education by integrating academic and vocational coursework and encouraging students to think about future work earlier in their schooling. In 1998, reauthorization of the Carl Perkins Vocational and Technical Education Act moved career technical education into the accountability era in education reform. It sought to improve the level and amount of career and technical education while holding the system accountable for student outcomes measured in terms of *both* academic and vocational competencies. The intent was to integrate academics into career technical education to enable students to adapt more quickly to changes in industries, find it easier to switch careers, and pursue college if they chose.

Regional and Occupational Centers and Programs (ROCPs). While vocational education was reduced in high schools, one well-established school-based program has provided a wide variety of occupational training to California students for nearly four decades and has become one of the state's most important and successful providers of career technical education. Regional Occupational Centers and Programs (ROCPs), established in 1968, work either in partnership with high schools and community colleges or as stand-alone programs. Currently, ROCPs serve over 460,000 California high school students and adults annually. ROCPs are designed to help students become employed in upwardly mobile careers and to be successful in moving on to postsecondary education. Unlike other workforce preparation programs, ROCPs must offer only courses that reflect current labor market demands that are determined with the input of over 18,000 businesses in California.

Examples of K-12 funded programs. Career technical education programs have waned, but have not disappeared from California schools. In fact, many still receive funding from state and federal sources (see Display 2), although not at a level sufficient to meet the need. The California Department of Education estimated that for the 2003-04 school year, 42% of high school students participated in some form of career technical education beyond the introductory level. Total support in 2003-04 was just over \$2 billion, serving more than 2.5 million individuals.

Display 2: K-12 Programs and Funding for 2003-04

Program	Agricultural Education	Adult Education	Career Technical Education	CalWorks Adult Education	Regional Occupational Centers and Programs	Apprenticeship Program
Total Funding	\$4,217,610	\$673,386,017	\$918,806,600	\$9,900,000	\$382,697,000	\$15,852,000
Service Providers	High Schools	Adult schools, community-based organizations, community colleges, and county offices of education	High school and Regional Occupational Centers and Programs	Adult schools and Regional Occupational Centers and Programs, sometimes in partnership with One Stop Centers	High schools and Regional Occupational Centers and Programs	Adult schools and Regional Occupational Centers and Programs
Target Population	High school students	Adults 16 and older who do not have high school diploma, lacking basic education skills	High school students and some adults	Adult CalWORKs recipients	High school and adult students	Registered apprentices
Number of Participants	59,357	1,283,038	496,742	No data available	500,137	67,849

Source: California Budget Project 2005.

Postsecondary education and workforce development in California

California and the nation have some of the best colleges and universities in the world. They were not necessarily established to be producers of workers, but rather as academic institutions to foster critical thinking, problem solving, creativity, and citizenship. Those skills, it can be argued, are also important to future workforce success, no matter what occupation one enters. As the economic needs of California change, the role of postsecondary education in supporting the workforce has changed. That role also varies widely among the public postsecondary segments, whose unique missions and admissions

policies were established and continue to be defined by the 1960 California Master Plan for Higher Education.

California's Community Colleges. Of California's three public postsecondary segments, the California Community Colleges have the most clearly defined vocational role—a role that has evolved over the past century. The first junior college was established in 1910 in Fresno. By 1960, there were 63 junior colleges providing two-year Associate degrees as well as adult education and community service courses. In 1989, AB 1725 made vocational education a primary mission of the community college system, along with transfer to four-year institutions. In 1991, AB 1497 added economic development to the system's mission in order to strengthen the relationship between colleges and the economy and broaden the ways the colleges work with employers.

The vocational mission of the community colleges is designed to meet the needs of workers entering or updating skills in technical and professional career paths (see Display 3). Coursework is delivered in a variety of formats to meet the diverse needs of students. Formats range from condensed courses to semester or year-long lower division undergraduate courses. In 2001, the California Community College Board of Governors documented the utilization of "career ladders" in the publication, *Ladders of Opportunity*. "Career Ladders" combine classroom instruction and workplace training that provide multiple re-entry points to best meet the needs of the evolving workplace of the 21st century.

Today, California's 109 community colleges provide substantial benefits to industry, particularly to smaller firms that may not be able to afford their own training. As a result, they play the largest postsecondary role in direct workforce training and development, investing more than \$354 million in a wide range of occupational programs, including newly emerging specialties in areas such as biotechnology. In addition, they offer occupational courses to meet re-licensure and continuing education requirements, some through contracts with large companies throughout the state.

Display 3: California Community Colleges Workforce Development Programs

Program	Economic and Workforce Development	Vocational and Technical Education	Adult Education	CalWORKs Education	Apprenticeship Program
Total Funding	\$35,790,000	\$56,900,000	\$206,300,000	\$42,580,000	\$12,576,000
Target Population	Employers, workers, CCC faculty and students	CCC students	Adults	CalWORKs recipients and individuals transitioning to work	Registered apprentices
Number of Participants	97,000 students 7,500 faculty 55,000 businesses 90,000 workers	More than 2.9 million full and part-time students	No data available	40,000	No data available

Source: California Budget Project 2005.

The California State University. The California State University (CSU) system began in 1862 as the California State Normal School with a mission to train teachers. It has evolved to a broad-based system offering more than 200 baccalaureate and masters degree programs that cover most contemporary occupations, including business, public administration, computer sciences, criminal justice, engineering, nursing, and social work.

Because of the geographically diverse location of its 23 campuses, CSU faculty members are able to build relationships with local firms and businesses as well as provide expert advice throughout the state. They are also well suited to apply research and scientific findings as a part of their responsibilities. To better meet the ever-changing workforce needs, CSU has created programs suited to working individuals. Examples include Colleges of Continuing Education and Executive MBA programs.

The University of California. UC serves state workforce needs by educating undergraduate, graduate, and professional students, and offering University Extension programs; it also serves as California's primary academic agency for research. The former complements the other public higher education segments in providing the human capital needed to support California's economy. The latter represents UC's unique and significant contribution to forming new industries, creating new jobs, and generating prosperity for the state.

Agricultural research has been a fundamental component of UC scientific and technological support for state economic activity since the institution was founded. In addition, UC research in computer science, engineering and microelectronics helped create the Silicon Valley industries. Likewise, scholarship in the biomedical sciences, as well as the critical mass of academic researchers in the state (many in UC medical centers), prompted the creation of California's biotechnology industry. These fields of inquiry and others such as energy, earthquake safety, forestry, transportation, and marine science are part of the instruction and research that links the University to the state economy.

Private Postsecondary Education Institutions. There are three separate categories of private institutions.

Independent Colleges and Universities - There are more than 75 degree-granting, non-profit independent colleges and universities in California that are accredited by the Western Association of Schools and Colleges (WASC). The size of the school and types of degrees offered vary and range from major research universities to small liberal arts colleges to professional graduate schools. Most grant baccalaureate and advanced degrees; a few grant two-year associate degrees. Most offer traditional academic programs.

State Approved Schools and Colleges – There are 314 state-approved for-profit institutions with academic degree programs operating throughout the state. Most enjoy specialized programmatic accreditation. They offer a variety of programs, ranging from psychology to art to aviation and electronics, and serve approximately 100,000 students.

State Approved Vocational Institutions – California has 1,229 non-degree granting institutions that offer vocational and occupational training programs to approximately 300,000 students in areas ranging from cosmetology to truck driving to interior design. Most are accredited by specialized industry-based accreditation agencies.

Conclusion and next steps

As outlined in this paper, numerous programs and institutions in California's education systems play a significant role in workforce development, along with a plethora of training programs that are funded through the California Workforce Investment Board, the Employment Training Panel, CalWORKs, and other sources. The public investment in education and workforce development statewide totals well over the \$12 billion dollars invested in the public higher education systems alone. The many and

varying roles of the education and the workforce development systems challenge the state's ability to meet its economic needs. No single element of the workforce development system, including education, can assure that California is able to effectively and efficiently respond to the demands of the economy.

More importantly, California lacks a mechanism to bring all the disparate stakeholders together at the state level to explore the most effective and efficient use of resources to meet the state's workforce needs. Such a mechanism could support a more systemic approach that recognizes and integrates the common goals and differing roles of all the major players—K-12 and postsecondary education, workforce development, and economic development. The Commission's intent is to explore the role and responsibilities of postsecondary education in this more systemic context, and to encourage development of a comprehensive state-level mechanism to involve all the stakeholders. It will do this through gathering and analyzing data and producing additional papers on the skills and knowledge offered through the state's educational systems, how they fit into the state's short-term and long-term job picture, and what policies would most enable postsecondary education to play its role effectively to support California's workforce in a 21st century economy.

Appendix A Outline of Briefs in the Series

Brief 1: A Historical and Contextual Look at Education and Workforce Development

Brief 2: California's Current and Future Workforce: Trends and Needs

I. Population, demographics, salary trends

Data Sources: BLS, LMID, CPEC, PPIC

II. Economic and industry projections and trends

- Largest growth industries and occupations
- Fastest growth industries and occupations

Data Sources: BLS, LMID, CPEC

III. Workforce knowledge and skills projections

- Regional economic clusters
 - Knowledge and skills needed
- Research and development
 - Knowledge and skills needed
- Recruitment from out of state (what areas, trends etc.)
 - Knowledge and skills

Data Sources: BLS, LMID, CPEC

IV. Postsecondary education production

- Baccalaureate
- Community college
- Vocational technical education
- Majors, degrees, certificates awarded

Data Sources: CPEC

Brief 3: The Connection Between K-12 and Postsecondary Education and the Workforce in California

I. The type and amount of knowledge and skills necessary for success in the workforce and postsecondary education

- Historical connection between K-12 and workforce/postsecondary education
- Curriculum and rigor in K-12
- Knowledge and skills necessary for success in the workforce
- Knowledge and skills necessary for success in postsecondary education
- Articulation

High school to workforce

High school to postsecondary education

Data Sources: Achieve, College Board, CEPR: Standards for Success, ACT, Public Agenda, Onet

Brief 4: Final Analysis and Conclusions: How can California's Postsecondary Education System Continue to Develop and Maintain Agility and Efficiency?

I. Investments

- Current investments into the system
- Future investments to meet the needs of the economy

II. Dialogue

- Current dialogue
- Future collaboration

III. Accountability

- Keeping California agile and efficient

Appendix B The Nexus Between Postsecondary Education and the Workforce – Major Actions

FEBRUARY – CPEC Policy staff reached consensus on pursuing this topic and to begin writing a prospectus for presentation at the March Commission meeting.

MARCH – Prospectus was presented at the March 22nd-23rd Commission meeting. Commissioners gave unanimous support to continue with this research topic.

- Prospectus highlighted the need for this issue to be addressed in a series of policy briefs.

APRIL – CPEC staff continued gathering data and research on this topic as a means to formulate research questions, concurrently constructing an advisory committee.

MAY – CPEC staff convened a technical advisory committee on May 23rd around the issue of the nexus between postsecondary education and the workforce. The committee is made up of the major workforce agencies, higher education segments, and state agencies. The purpose of the committee is two-fold, first to advise Commission staff in the creation and completion of research questions, and second to increase and improve dialogue among different segments and agencies in California.

JUNE – CPEC staff collated input from first technical advisory committee meeting and constructed several research questions for review by the Commission and advisory committee.

- Commission staff presented research questions at June 21st Commission meeting.

JULY – CPEC staff convened the second technical advisory committee meeting on July 12th. The committee reached consensus on 4 contextual questions, and one overarching question. “*How does California’s postsecondary education system contribute to the needs of the state’s economy and its future?*”

- CPEC staff completed a draft of the first brief for review by the technical advisory committee in August.

AUGUST – CPEC staff convened the third technical advisory committee meeting on August 9th to review and give input on this first draft.

- Staff is currently revising draft for presentation at the September Commission meeting

SEPTEMBER – Staff will present draft of the first policy brief to the Commission during the Commission meeting on September 6th and 7th.

- Staff will complete draft in preparation for October technical advisory committee meeting.

OCTOBER – Staff will begin the second policy brief, which looks at California’s current and future workforce trends and needs.

- Staff will convene technical advisory committee meeting to review the final draft of the first policy brief.